

Percents!

Review Calculating Percent from a decimal or Fraction

$$\frac{14}{42} = 0.\overline{33}$$

$\nearrow \times 100 = 33.\overline{3}\%$

o/o to decimal $\left| \div 100 \right.$
decimal to o/o $\left| \times 100 \right.$

or

$$0.52 \xrightarrow{\text{move decimal 2} \rightarrow} = 52\%$$
$$52\% \xrightarrow{\text{move decimal 2} \leftarrow} = 0.52$$

double $90 = 90 \times 2$

What is 17% of 90?

$$\approx 17\% = 0.17$$

$$90 \times 0.17 = 15.3$$

$$15\% \text{ of } 110$$

$$15\% = 0.15$$

$$110 \times 0.15 = 16.5$$

Sales Tax

In Ontario we have a sales tax of 13 percent. This means that when you look at a price tag, you need to add 13 percent to that in order to know what you will actually pay...

What is our HST expressed as a decimal?

$$13\% = 0.13$$

To find the price with tax, we

$$\$108$$

$$\begin{aligned}\rightarrow \text{Tax} &= 108 \times 0.13 \\ &= 14.04\end{aligned}$$

$$\begin{aligned}\text{Total} &= 108 + 14.04 \\ &= 122.04\end{aligned}$$

Discounts - The opposite of tax:

For discounts, we take that percentage off!

30%
OFF

\$108

$$30\% = 0.30$$

$$\text{Discount} \left\{ 108 \times 0.30 = \$32.40 \right.$$

$$\$108 - \$32.40 = \$75.60$$

$$\text{Tax} \left\{ 13\% \text{ tax} = 0.13 \right.$$

$$75.60 \times 0.13 = 9.828$$

$$\approx 9.83$$

$$\text{Total} = 75.60 + 9.83$$

$$= 85.43$$

Both together!!!! Sounds crazy!

Commission: Commission is when a person gets paid based on how well they sell something. Real estate agents, and sometimes sales staff, get a percentage of the value they are able to sell as pay.

6% commission

= 300,000

$$6\% = 0.06$$

$$300\,000 \times 0.06 = \$18\,000$$

Homework:

Calculate the following: 

12% of 200

18% of 134

20% of 1500

-13%

a) A hat (a big one) that I want to buy has a price of \$29.99. What will be the price after taxes are added?

b) I wait, and the hat is discounted by 30%. What will be the NEW price AFTER taxes?

c) The sales person gets a 5% commission on the BEFORE tax price. What is their commission?

with the discount

$$12\% \text{ of } 200$$

$$12\% = 0.12$$

$$0.12 \times 200 = 24$$

$$18\% \text{ of } 134 = 0.18 \times 134$$

$$= 24.12$$

$$20\% \text{ of } 1500 = 0.20 \times 1500$$

$$= 300$$

$$18\% = 0.18$$

$$20\% = 0.20$$

$$2a) \text{ Price} = 29.99$$

$$\text{Tax} = 13\%$$

$$13\% = 0.13$$

~~3.90~~
3.90

~~Price with~~

$$\text{Tax} = 0.13 \times 29.99$$

$$\text{Total Price} = 3.90$$

$$= \text{Price} + \text{tax}$$

$$= 29.99 + 3.90$$

$$= \underline{33.89}$$

$$b) 30\% = 0.30$$

$$29.99 \times 0.30 = 8.997$$

$$= 9.00 \leftarrow \text{discount!}$$

$$29.99 - 9.00 = \underline{20.99} \leftarrow \text{discount Price!}$$

Taxes are 13%

$$13\% = 0.13$$

$$20.99 \times 0.13 = \underline{2.73} \leftarrow \text{Tax!}$$

$$20.99 + 2.73 = \underline{23.72}$$

c) 20.99 is the before tax discount price

Commission is 5%

$$5\% = 0.05$$

$$\text{Commission} = 0.05 \times 20.99$$

$$= \underline{1.05}$$

~~23.72~~
23.72

Simple Interest

Interest is the amount charged on a loan, expressed usually as a percentage per year.

Ex. I borrow \$100, at an interest rate of 5% per year, for a year. What will my interest be?

$$\begin{aligned} 5\% &= 0.05 \\ \text{Interest} &= 0.05 \times 100 \\ &= \$5 \end{aligned}$$

I borrow \$7500 from my mom, to buy candy.

I am charged an interest rate of 3.5% for 2 years.

I will pay it back with EQUAL monthly payments over two years.

How much interest will I pay?

How much should I be paying back EACH MONTH?

For 1 year, I would be charged

$$3.5\% = 0.035$$

$$\text{Interest for 1 yr} = 0.035 \times 7500 \\ = \$262.50$$

$$\text{Interest for 2 yrs} = 262.50 \times 2 \\ = \$525.00$$

Homework:

Calculate the interest

a) \$2500 with an annual rate of 6% for 6 months

b) \$6000 with an annual rate of 6% for 3 years

I borrow \$4000 at a rate of 7% per year for 4 years.

I want to make even monthly payments to repay.

How much interest will I pay?

What should my payments be each month?

I loan my friend \$500 for 8 months, at a rate of 2.5% per year. How much will he pay me back at the end of 8 months?

I borrow \$1000 at 4% interest per year.

How much interest will I owe in:

$$4\% = 0.04$$

a) 1 year? $\rightarrow 1000 \times 0.04 = 40$

b) 2 years $\rightarrow 40 \times 2 = 80$ $\frac{26.66}{26.67}$

c) 3 years $\rightarrow 40 \times 3 = 120$

d) 6 months $\rightarrow 40 \times \frac{6}{12} = 20$

e) 8 months $\rightarrow 40 \times \frac{8}{12} = 26.67$ months

f) 2 years 8 months $\rightarrow 40 \times 2 \frac{8}{12} = 40 \times \frac{32}{12}$ months

2. I borrow \$500 for 1 year at 5%. I want to pay it back monthly. I want to make equal monthly payments for the 12 months.

$$5\% = 0.05$$

$$\text{Interest} = 500 \times 0.05 = 25$$

$$\text{Total Repay} = 500 + 25 = 525$$

$$\text{Monthly Payments} = 525 \div 12 = 43.75$$